AEGIS ENVIRONMENTAL, INC.

801 Riverside Avenue, Suite C, Roseville, CA 95678 ✦ 916 • 782-2110 / 916 • 969-2110 / FAX 916 • 786-7830

January 9, 1991

Gilbert M. Wistar
Alameda County
Health Care Services
Department of Environmental Health
880 Swan Way, Rm. 200
Oakland, CA 94621

Subject: E.C. Buehrer Site at 1061 Eastshore Highway, Albany, CA

Dear Mr. Wistar:

Enclosed is the Phase II Hydrogeologic Assessment Work Plan for the subject site along with the original cover letter that was prepared to accompany the work plan. For some reason you did not receive the work plan, so I am submitting another copy for your files. Questions or comments may be directed to me or Pat Wright at (916) 782-2110.

Very Truly Yours,

Larry Braybrooks

Larry Braybrooks
Staff Geologist

91 JAN 10 PM 1:15

AEGIS ENVIRONMENTAL, INC.

801 Riverside Avenue, Suite C, Roseville, CA 95678 ✦ 916 • 782-2110 / 916 • 969-2110 / FAX 916 • 786-7830

December 18, 1990

Gilbert M. Wistar
Alameda County
Health Care Services
Department of Environmental Health
80 Swan Way, Rm.200
Oakland, CA. 94621

Subject: Site Assessment Work Plan for 1061 Eastshore Highway
Albany, California 94710.
E.C. Buehrer & Associates, Inc.

Dear Mr. Wistar:

Enclosed is the Phase II Hydrogeologic Assessment Work Plan prepared by Aegis Environmental, Inc. Aegis presents this work plan in response to your letter of request to Mr. Clayton Johnson of E.C. Buehrer, Inc., dated November 20, 1990. This work plan addresses the definition of the plume of dissolved hydrocarbons in ground water and shallow soil contamination beneath the site. Aegis proposes two downgradient wells as a component of the strategy to define the plume of dissolved hydrocarbons in ground water beneath the site. At this stage, Aegis proposes to define the plume and the shallow soil contamination without consuming the time required to permit off-site drilling. Any questions or comments you have may be directed to Pat Wright or me at (916)782-2110.

Sincerely,

Larry Braybrooks

Larry Braybrooks

cc: Lester Feldman, RWQCB

PHASE II
HYDROGEOLOGIC ASSESSMENT WORK PLAN

E.C. Buehrer & Associates, Inc.
1061 Eastshore Highway
Albany, California 94710

Aegis Project No. 90-007

December 20, 1990

Prepared By:
AEGIS ENVIRONMENTAL, INC.
801 Riverside Avenue, Suite C
Roseville, California 95678
(916) 782-2110

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1.0 INTRODUCTION

Aegis Environmental Inc. (Aegis) presents this Phase II Hydrogeologic Assessment Work Plan for E.C. Buehrer Associates, Inc. site located at 1061 Eastshore Highway in Albany (Alameda County), California (Figure 1). This work plan was ordered by the Alameda County Health Care Services Department of Environmental Health based on the findings of Aegis' Phase I Site Assessment.

1.1 Objectives

The objectives of the proposed work are as follows:

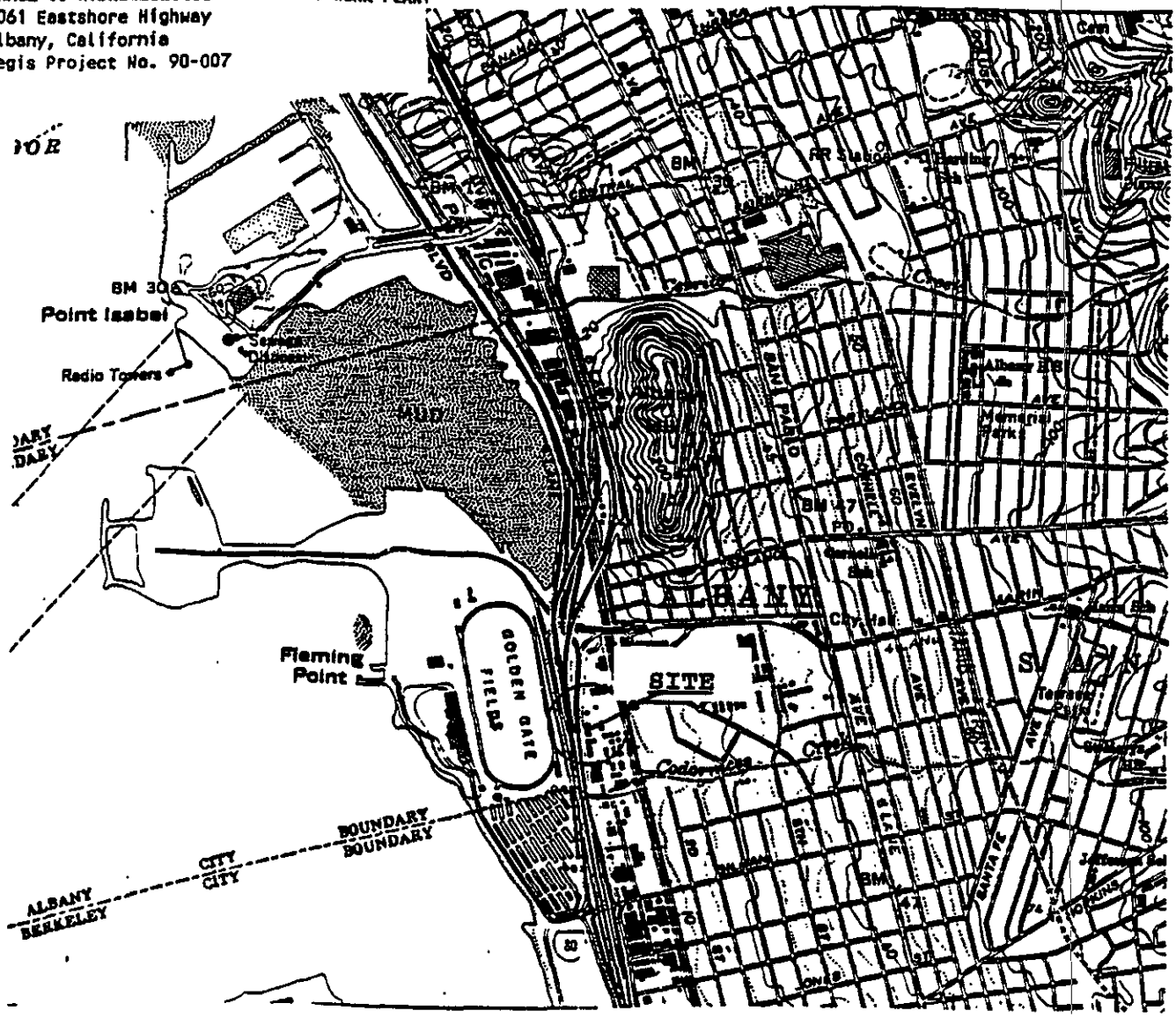
- Define the lateral extent of soil containing petroleum hydrocarbons on the site.
- Install additional monitoring wells to delineate the plume of dissolved hydrocarbons beneath the site.

1.2 Scope Of Work

The following activities are proposed to accomplish the objectives of this work plan. All work will be performed in accordance with procedures described in the Methods section of this report (Section 4.0).

- Drill, log, and sample four additional soil borings at the locations shown in Figure 2.
- Convert the four soil borings to ground water monitoring wells.
- Arrange for the survey of top-of-casing of the additional wells by a state-licensed surveyor.
- Measure water levels and obtain water samples from all monitoring wells. Verify the direction of ground water flow and gradient beneath the site.
- Submit selected soil and water samples to a state - certified laboratory for analysis.
- Prepare a factual report of the findings, with conclusions under separate cover.

PHASE II HYDROGEOLOGIC ASSESSMENT WORK PLAN
1061 Eastshore Highway
Albany, California
Aegis Project No. 90-007
2



SCALE: 1" = 2,000'

0 2,000

GENERAL NOTES:

BASE MAP FROM
STANDARD QUADRANGLE
7.5 MINUTE TOPOGRAPHIC
BERKELEY, CA.

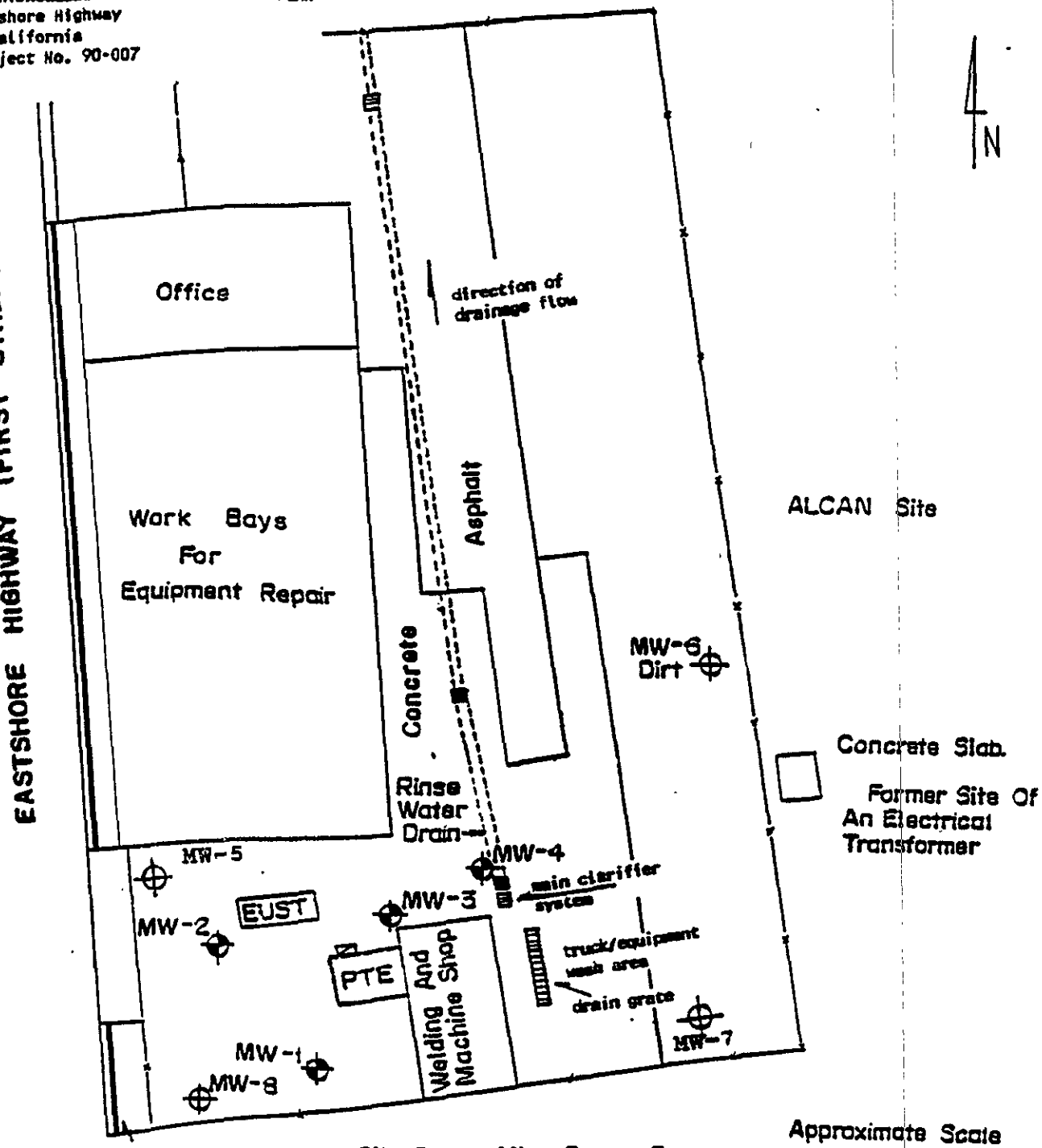
CALIF

FIGURE 1
SITE LOCATION MAP
E.C. Buehrer Associates, Inc.
1061 Eastshore Highway
ALBANY, Ca.

AEGIS JOB NO. 90 - 007

DRAWN BY: Ed Bernard DATE: May 10, 1990
REVIEWED BY: L. Bray Arnold DATE: May 15, 1990

PHASE II HYDROGEOLOGIC ASSESSMENT WORK PLAN
1061 Eastshore Highway
Albany, California
Aegis Project No. 90-007
3



LEGEND

- Monitoring Well
- Dispenser
- Monitoring Well (Proposed)
- Drain Grate

NOTE

PTE = Previous Tank Excavation
EUST = Existing Underground Storage Tanks

FIGURE 2
PROPOSED MONITORING WELL LOCATIONS
E.C. Buehrer Associates, Inc.
1061 Eastshore Highway
ALBANY, Ca.

AEGIS Job No. 90-007

DRAWN BY: Ed Bernard DATE: June 8, 1990
REVIEWED BY: L. Braybrooks DATE: June 10, 1990

2.0 BACKGROUND INFORMATION

The subsections presented below provide information regarding site location, site description, adjacent land uses and on-site utilities.

2.1 Site Location

The site is located at 1061 Eastshore Highway in Albany, (Alameda County) California (Figure 1). The site has been occupied by E.C. Buehrer & Associates for several years.

2.2 Site Description

The site facilities consist of two buildings, one 1000-gallon single wall underground gasoline tank, and one 550-gallon double-wall, above ground, waste oil tank. In February 1988, one 300-gallon underground waste oil tank and one 1000-gallon underground gasoline tank were permitted and removed from the site. The large building along the western boundary of the site is utilized for offices (about 15%) and work bays (about 85%) for equipment repair. The small building along the eastern boundary of the site is utilized as a welding and machine shop (Figure 2). The site is constructed on fill material.

2.3 Adjacent Land Uses

The site is located in an industrial area of Albany, California. Adjacent to the site in an easterly direction is an open area that was formerly an Alcon Aluminum Metals Plant; to the north there exists a sprinkler and plumbing supply business; to the south is a diesel engine service and repair shop; and the Eastshore Highway is located on the west boundary of the site.

2.4 Utilities

Underground utilities at the site were located prior to previous work performed. As an additional preventive measure, the first five feet of all borings will be advanced by hand auger. Three underground utility structures are located on the site. A storm drain/oil clarifier system runs north-south the length of the site in the driveway area east of the main building (Figure 2). The purpose of this clarifier system apparently is to separate oil and grease from water as trucks and equipment are washed. A natural gas line runs north-south along the east edge of the property easement within two feet of a chain-link fence. A city sanitary sewer pipe runs north-south the length of the site immediately east of the clarifier/storm drainage system.

2.5 Previous Investigations and Leak History

On February 18, 1988, a 300-gallon steel, single wall, underground waste oil tank and a 1000-gallon steel, single wall, underground gasoline storage tank were excavated and removed from the site. Reportedly, in December 1987, the 300-gallon waste oil tank failed a precision tank test. The failed test, in part, prompted the decision to remove the waste oil tank. Reportedly, the 1000-gallon gasoline storage tank had not been in use for the previous 2 to 3 years. There are no records that a tank tightness test was ever performed on the 1000-gallon gasoline tank. The excavation and tank closure was conducted by Willis Brothers Excavating, Pacheco, California. On March 14, 1988, soil samples obtained during the tank closure were analyzed by Trace Analysis Laboratory, Inc. (T.A.L.) of Hayward, California. It appears that high ground water was encountered during the tank removal since pit water samples were taken in lieu of soil samples. In April of 1990, Aegis drilled and installed four monitoring wells at the site. The locations of the existing wells are shown in Figure 2. The results of that work are presented in the Hydrogeological Investigation Results Report (Aegis, June 12, 1990).

2.6 Hydrogeology and Stratigraphy

Based on surface topography and various regional shallow ground water maps the shallow ground water beneath the site is expected to flow westerly from the Berkeley Hills and the San Pablo Ridge (area of ground water recharge) toward Cordonices Creek and the San Francisco Bay (area of discharge, Figure 1). However, due to the heterogeneous nature of the fill material, the presence of tidal influence and close proximity of the building foundations to the wells installed previously, the ground water elevations obtained from the monitoring wells did not provide a predictable gradient direction. First ground water was encountered at about 3 and one-half feet below ground surface. The soils beneath the site consist of recent Bay sediment (black mud-10' $\pm$), Quaternary alluvium consisting of clays, silts, sands and gravels which overlay Franciscan clays, silts and sandstone bedrock (Aegis, June, 1989).

3.0 PROPOSED WORK PLAN

A total of four additional soil borings will be advanced according to Alameda County guidelines at locations shown in Figure 2. The soil borings will be advanced to approximately 15 feet below grade or to a depth of 10 feet below first ground water. Borings will be advanced using a 10 inch diameter hollow stem auger. The monitoring wells will be constructed using 4-inch diameter, schedule 40, blank PVC well casing and 0.010 inch perforated well screen. Typical monitoring well construction details are presented in Appendix A.

As the borings are advanced, soil samples will be obtained according to procedures described in the Methods section of this work plan (Section 4.0). Selected soil samples will be delivered to a state-certified laboratory for analysis by EPA method 8260 for Fuel Fingerprint and purgeable halogenated hydrocarbons and methods 6010 and 7421 for Cadmium, Chromium, Zinc and Lead. Cuttings generated from soil borings will be composite sampled and stored on site, and secured by plastic sheeting, until laboratory analyses determine their content. Upon confirmation of chemical content, stockpiled soil will be disposed of in accordance with state regulations.

At least 24 hours after completion of well development, water samples will be obtained according to the procedures described in the Methods section of this report and delivered to a state-certified laboratory under chain-of-custody. Aqueous samples will be analyzed by EPA method 8260 for Fuel Fingerprint.

All field work performed during the site assessment will be completed according to the health and safety procedures outlined in the site safety plan included in Appendix B. A copy of the site safety plan will be available on site during all field operations.

4.0 METHODS

4.1 Soil Borings

Soil borings will be drilled and soil samples collected under the direction of a state-registered professional geologist or engineer. The soil borings will be advanced to a depth of approximately five below grade by hand auger. The soil borings will be advanced, below five feet to final depth, using a truck-mounted hollow-stem auger drilling rig.

To reduce the possibility of cross-contamination between boreholes, all downhole drilling equipment will be cleaned with a high pressure hot water wash between each boring. Rinsate will be captured and contained for proper disposal. To reduce cross-contamination between samples, the split-barrel sampler will be washed in a tri-sodium phosphate solution and double-rinsed in distilled water between each sampling event.

4.1.1 Soil Sampling

Soil sampling will be conducted using a two-inch O.D. split-barrel sampler or a two-inch I.D. California-type sampler driven into the soil by a 140-pound weight falling 30 inches. After an initial set of 6 inches, the number of blows required to drive the sampler an additional 12 inches is known as penetration resistance, or the "N" value. The N value is used as an empirical measure of the relative density of cohesionless soils and the consistency of cohesive soils. Upon recovery, a portion of the soil sample will be placed into a disposable container and sealed for later screening with an H-nu or TLV organic vapor sensor. Another portion of the soil sample will be used for classification and description. That part of the soil sample collected in a brass tube within the sampler will be stored on ice in an ice chest for transport to the laboratory.

4.1.2 Soil Classification

As the samples are obtained in the field, they are classified in accordance with the Unified Soil Classification System (USCS). Representative portions of the samples are then submitted to a soil mechanics laboratory for further examination and for verification of the field classification. Logs of the borings indicating the depth and identification of the various soil types, the N value, and pertinent information regarding the method of maintaining and advancing the borehole are also made.

4.1.3 Soil Sample Screening: Portable Photoionization Detector Method

After the soil sample container has been brought to ambient temperature, the head space of the container will be screened with a portable organic vapor analyzer calibrated for direct reading in parts per million volume (ppmv). The sample container will be partially opened and the detector probe immediately placed within the head space of the jar. The highest observed reading will be recorded.

4.2 Ground Water Monitoring Wells

Ground water monitoring wells will be constructed of 4-inch diameter PVC schedule #40 pipe. Slotted screen pipe will extend from ten feet below the water table to 5 feet above the water table or as local conditions allow. Schedule #40 PVC blank pipe will extend from the screened interval to a traffic grade monument box located at ground level. Filter pack will extend from total depth to two feet above the top of the screened interval. Two feet of bentonite pellets will be placed above the gravel pack to form a sanitary seal. Volclay grout will extend from the bentonite seal to land surface. The well head will be completed with a lockable, expansive bung. The locking well cap will be secured in a traffic grade monument box flush-mounted in concrete. The well head will be clearly labeled with well number, elevation, and measuring point. Typical ground water monitoring well construction details are included in Appendix A.

4.2.1 Monitoring Well Filter Pack and Slot Size Selection

The size of the gravel pack that will be placed adjacent to the well screen will be determined by the project manager, based on the local soil characteristics. The gravel pack will be selected such that it will permit the development of a zone of higher hydraulic conductivity adjacent to the well screen but will not allow piping of the finer-grained formation into the well bore. The slot size of the well screen will be selected such that it will retain a minimum of 95% of the filter pack material. A slot screen width of 0.010" with a Lonestar designation 0/30 sand pack is anticipated for emplacement.

4.2.2 Monitoring Well Development

Each monitoring well will be developed after construction by the surge and bail method. The well will be surged by a 4-inch diameter block at five foot intervals. Following interval surging the well will be bailed until the water produced is sediment-free and measurements of pH, specific conductance, and temperature stabilize. If the well is bailed dry during the development process, recharge rates will be recorded. No water or chemicals will be introduced into the monitoring wells during well development. All developed water will be placed in DOT 55-gallon drums and stored on site for later disposal.

4.2.3 Ground Water Sampling

A minimum of 24 hours following well development, and after water levels have been allowed to stabilized in the well, four to ten wetted casing volumes of liquid will be removed from each well by bailing with a Voss SingleSample disposable bailer or a reusable bailer that has been carefully cleaned in the field. Measurements of pH, specific conductance, and temperature will be made at regular intervals during this procedure. Removal of liquid from each well will continue until the measurement of pH, specific conductance, and temperature have stabilized. A liquid sample will then be collected from each well with a laboratory-cleaned, dedicated teflon bailer. Each sample will be appropriately labeled and stored on ice from the time of collection through the time of delivery to the laboratory. Ground water samples will be transported to the laboratory and analyzed within the EPA-specified holding times for the requested analyses. Standard chain-of-custody procedures will be followed and documented as described in section 4.4.2.

4.2.4 Petroleum Product

If free petroleum product is present in a well, the thickness of the product layer will be measured by application of a water-finding paste to a water-level-indicator tape. A sample of the product will be collected with a laboratory-cleaned teflon bailer and transferred to an appropriate sample container and subsequently submitted to a state-certified laboratory for analysis.

4.2.5 Ground Water Well Elevation Survey

Ground water monitoring well heads will be surveyed to establish elevation of the well head. Elevations of well head and top of PVC riser will be documented. The monitoring well head survey will be performed by a state-licensed professional surveyor or licensed engineer.

4.3 Laboratory Analysis

Soil and ground water samples will be analyzed pursuant to Alameda County regulations. All laboratory analysis will be performed by a state-certified laboratory. Soil and aqueous samples will be sampled by EPA method 8260 for Fuel Fingerprint. In addition, selected soil sample analyses will target 1,1 Dichloroethane, Tetrachloroethene, and Trichloroethene.

4.4 Quality Assurance Plan

4.4.1 General Sample Collection and Handling Procedures

Proper collection and handling are essential to ensure the quality of a sample. Each sample will be collected in a suitable container, preserved correctly for the intended analysis, and stored prior to analysis for no longer than the maximum allowable holding time. Details on the procedure for collection and handling of soil samples to be used on this project can be found in Section 4.1.

4.4.2 Sample Identification and Chain-of-Custody Procedures

Sample identification and chain-of-custody procedures ensure sample integrity and document sample possession from the time of collection to its ultimate disposal. Each sample container submitted for analysis will have a label affixed to identify the job number, date, and time of sample collection, and a sample number unique to that sample. This information, in addition to a description of the sample, field measurements made, sampling methodology, names of on-site personnel, and any other pertinent field observations will be recorded on the borehole log in the field records. All samples will be analyzed by a state-certified-laboratory.

A chain-of-custody form will be used to record possession of the sample from time of collection to its arrival at the laboratory. When the samples are shipped, the person in custody of them will relinquish the samples by signing the chain-of-custody form and noting the time. The sample-control officer at the laboratory will verify sample integrity and confirm that it was collected in the proper container, preserved correctly, and there is an adequate volume for analysis. If these conditions are met, the sample will be assigned a unique log number for identification throughout analysis and reporting. The log number will be recorded on the chain-of-custody form and in the legally-required log book maintained by the laboratory in the laboratory. The sample description, date received, client's name and any other relevant information will also be recorded.

4.4.3 Analytical Quality Assurance

In addition to routine calibration of the analytical instruments with standards and blanks, the laboratories are required to run duplicates and spikes on 10 percent of the analyses to insure an added measure of precision and accuracy. Accuracy is also verified through the following:

1. U.S. Environmental Protection Agency (EPA) and State certification programs.

2. Participation in an interlaboratory or "round-robin" quality assurance program.

3. Verification of results with an alternative method. For example, calcium may be determined by atomic absorption, ion chromatography, or titrimetric methods. Volatile organics may be determined through either purge and trap or liquid-liquid extraction methods.

4.4.4 Miscellaneous Checks of Accuracy

Where trace analysis is involved, purity of the solvents, reagents and gases employed is of great concern. Laboratories maintain service contracts on all major instrumentation; gas chromatograph, atomic absorption, ion chromatography, and total organic carbon analyzers are all serviced and maintained regularly. The above program is more than sufficient for most needs. Additional quality assurance such as spikes and duplicates on all analyses, will be provided if requested.

5.0 SCHEDULE

Aegis will proceed with the work outlined above when approval is obtained from regulatory agencies. A drilling crew will be mobilized to drill the proposed soil borings within one week of approval of this plan. Laboratory analytical results will require ten working days to obtain. A summary report of the assessment results including information on soil characteristics, hydrologic conditions, conclusions, and recommendations under separate cover will be prepared within four weeks after laboratory results are obtained.

6.0 REMARKS/SIGNATURES

The interpretations and conclusions contained in this work plan represent our professional opinions. These opinions are based on currently accepted geological and engineering practices in use at this time and for this specific site. Other than this, no warranty is implied or intended. This work plan has been prepared solely for the use of E.C. Buehrer, Inc. and any reliance on the work plan by third parties shall be at such parties' sole risk.

AEGIS ENVIRONMENTAL, INC.

This report was prepared by:

Larry Braybrooks
Staff Geologist

Date: 12-19-90

This report was reviewed by:

Mark A. Richards
Senior Geologist

Date: 12-19-1990

The work described herein will be performed under the direct Supervision of a State of California registered professional geologist:

Pat Wright
Registered Geologist #529

Date: 12-19-90

7.0 REFERENCES

Geologic Map of California, San Francisco sheet, California State Division of Mines and Geology, 1980.

Hydrogeologic Investigation Results Report, Aegis, June 12, 1990.

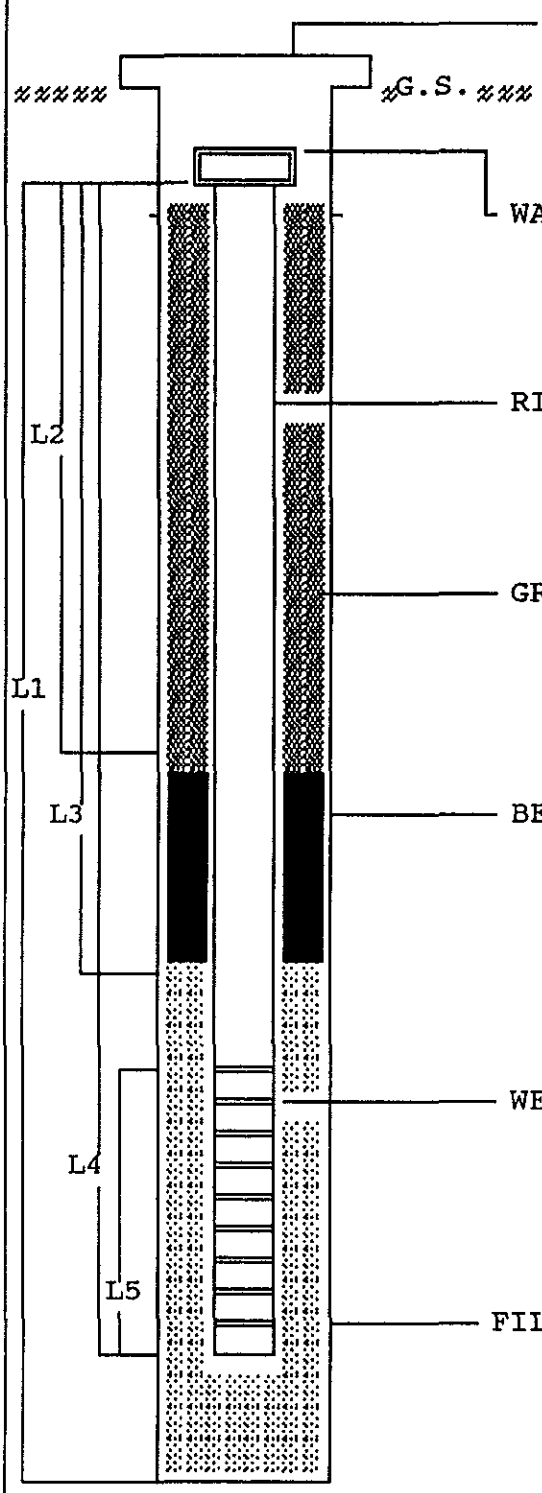
APPENDIX A
Monitoring Well Construction Details

MONITORING WELL CONSTRUCTION DETAILS

E.C Buehrer & Associates

PROJECT: 1061 Eastshore Highway Albany, CA DATE : 12/20/90

PROJECT NO.: 90-007 WELL NO.: 5-8



CHRISTY BOX
Diameter: 12 in.
Type (flush/above): flush
Entry Tool : 10.0" HSA

WATER PROOF LOCKING CAP
Type: Geostore
Lock Cap: yes/expanding

RISER MATERIAL
Type Material: PVC
Diameter: 4 in.
Joint Type: flush threaded

GROUT SEAL
Material Mix: Portland cmnt.
Total Depth From Surface: 1.0 ft.

BENTONITE SEAL
Type: pellets
Size: 1/4 in.
Total Thickness: 1.0 ft.

WELL SCREEN
Type Material: PVC
Diameter: 4 in.
Joint Type: flush threaded
Slot Size: 0.01
Total Length: 13 ft.

FILTER PACK
Type Material: 1/20 sand
Total Thickness: 17 ft
Distance Above Screen: 1.0 ft.

L1 18 ft.
L2 1 ft.
L3 2.5 ft.
L4 17.0 ft.
L5 15 ft.

TOTAL DEPTH OF WELL: 17.0 ft.
TOTAL DEPTH OF BORING: 18.0 ft.
DIAMETER OF BORING: 10.0 in.
METHOD OF DRILLING: hollow stem auger

APPENDIX B
Site Safety Plan

POST ON-SITE

FIELD INVESTIGATION TEAM
SITE HEALTH AND SAFETY PLAN

A. GENERAL INFORMATION

Aegis Project Number: 90-007

Site Name: E.C. Buehrer Assoc., Inc. Client Project Number: NA

Street Address: 1061 Eastshore Highway
Albany, California 94701

Plan Prepared by: Larry Braybrooks Date: 8/10/90

Approved by: Pat Wright Date: 8/10/90

Objectives:

Phase I - Initial investigation of subsurface conditions

Phase II - Complete the hydrogeological investigation- delineate the lateral extent of soil and ground water contamination beneath site

Phase III -

Proposed Date of Investigation: 2/15/91

Hazard Summary/Level of Protection

A:_____ B:_____ C:_____ D: XX (with modifications)

Special hazard precautions due to traffic will require all persons working within 50 feet of Highway 50 to wear orange vests. Due to steepness of terrain all persons will be required to work in teams of no less than two. Due to heavey brush, all persons working at the site will be required to wear heavy trousers and work boots and gloves. Site may contain poison oak plants.

B. SITE/WASTE CHARACTERISTICS

Waste/Contaminant Type(s): XX **Liquid** XX **Soil** ____ Solid ____ Sludge
____ Gas

Characteristic(s): ____ Corrosive ___ Ignitable ____ Radioactive
XX **Volatile** XX **Toxic** ____ Reactive
____ Unknown ____ Other (Name):

Contaminant Source: previously removed underground waste oil storage tank, but not neccessarily exclusively.

Surrounding Features: empty lot, industry, freeway, bay

Status (active,inactive,unknown): Active

History (worker or non-worker injury; complaints from public; previous agency action):

Gasoline and waste oil constituents detected in water samples taken during tank pulls.

C. HAZARD EVALUATION

Have all contaminants been identified that may be present on site?

Yes XX No_____ Unknown_____

List all chemicals below that have been identified or are suspected on site and their maximum concentrations in soil/water. Information on hazardous properties are listed in the section G. For chemicals not shown in section G, enter the hazardous property information in the spaces provided.

Maximum Concentration : mg/kg

Chemical Name	In Soil	In Water
Total Oil & Grease	6,400	NA
Non-Polar Oil & Grease	3,700	NA
Chromium	69.0	NA
Lead (EPA 7421)	40.0	NA
Zinc	520	NA
TPH as gasoline	1300	0.33
TPH as diesel	900	0.26
TPH as motor oil	1,700	0.87
Benzene	NA	0.029
Ethyl Benzene	NA	0.001
Toluene	NA	0.0034
Xylenes	NA	0.0058
1,1 Dichloroethane	0.0056	0.00049
Tetrachloroethene	0.0046	ND
Trichloroethene	0.004	ND
Chloroethane	ND	0.0009
Aroclor 1254 (PCB)	300	NA

ND = not detected
NA = not analyzed

Free product present? _____ Yes XX No

Type of product present: gasoline/dissolved product, diesel, oil & grease, halogenated hydrocarbons

ALAMEDA COUNTY
HEALTH CARE SERVICES
AGENCY
DAVID J. KEARS, Agency Director

DEPARTMENT OF ENVIRONMENTAL HEALTH
Hazardous Materials Program
80 Swan Way, Rm. 200
Oakland, CA 94621
(415)

November 25, 1991

Mr. Neil Hamre
1061 Eastshore Highway
Albany, CA 94710

RE: E.C. Buehrer, 1061 Eastshore Highway, Albany,CA

Dear Mr. Hamre:

I have reviewed your Soil Remediation Workplan dated August 21,1991, and your Underground Tank Closure Plan prepared by Aegis Enviromental. It is my understanding after speaking with Mr. Larry Braybrooks of Aegis that you would like to perform your remediation concurrently with the underground tank removal. Before I can approve your workplan, the following conditions must be met:

1. A monitoring well must be installed within 10 feet of the former tank location which is the source of the contamination. This new well is to replace MW1 - MW4 that are going to be destroyed during the excavation.

2. Confirmatory sidewall samples must be taken at a minimum of every 20 linear feet

3. Figure 2, Site Map of the soil remediation workplan needs to be amended to identify the removal of the existing underground tank, and the proposed areas of excavation. In addition, Sect. 3.2, Page 4, needs to be amended to reflex the removal of the existing underground tank.

If you have any questions, please contact me at 271-4320.

Sincerely,

Larry Seto
Sr. Hazardous Materials Specialist

cc: Larry Braybrooks, Aegis Enviromental
RWQCB
Rafat Shahid, Assistant Agency Director, Enviromental Health
Gil Jensen, Alameda County District Attorney's Office
Howard Hatayama, DTSC
Files

D. SITE SAFETY WORK PLAN

PERSONNEL

Team Member(list)	Title	Responsibility
Pat Wright	Senior Professional	Site Coordinator
Brian Garber	Site Safety officer	

Perimeter Establishment:

Map/Sketch Attached?	Yes XX No___	Site Secured?	Yes XX No___
Perimeter Identified?	Yes XX No___	Zero line defined?	Yes___ No XX
Free Product?	Yes___ No XX	Dissolved Product?	Yes XX No__

INVESTIGATION-DERIVED MATERIAL DISPOSAL:

Soil removed from the borings will be placed on and covered by visquene. Two composite samples will be obtained from the stockpiled soil. Samples will be analyzed for BTEX TPH and total and organic lead to classify the stockpiled soil. Upon classification the soils will be disposed of in accordance with existing regulations and guidelines.

D1. PERSONAL SAFETY

SITE ENTRY PROCEDURES: Notify store manager

PERSONNEL PROTECTION:

Level of protection: A_____ B_____ C_____ D_XX___

Modifications:

1. All personnel must wear hard hat, safety shoes, safety glasses and/or face shield.

2. Neoprene gloves and tyvek/saranax suit should be worn if contact with contaminated water or soil is likely.

3. Hearing protection must be worn if noise levels prevent normal conversation at a distance of three feet. No smoking, eating, or drinking is allowed on site.

4. Respiratory protection is dependent on conditions listed in next section.

5. No personnel are to enter or approach any excavation area where there is a danger of wall collapse or confined space entry.

Surveillance Equipment and Materials:

Instrumentation	Action Level	Action
photoionization	5 units or 5 times background (breathing zone)	use halfmask respirator with organic cartridges
oxygen meter	<19. 5% oxygen	do not enter area or confined space until levels are reduced.
explosimeter	>10% LEL	eliminate all ignition sources and
	>20% LEL	reduce levels immediately or leave site

First Aid Equipment: Standard first aid kit, portable eye wash

First Aid Procedures:

Ingestion: DO NOT induce vomiting, summon medical help
Inhalation: Move victim to fresh air, seek medical attention if needed
Dermal Exposure: Remove contaminated clothing, flush with water

DECONTAMINATION PROCEDURE:

Personnel: Flush exposed skin with soap and water.

WORK LIMITATIONS:(time of day, weather, heat/cold stress):

In high ambient temperatures, follow heat-stress precautions: Provide plenty of cool water and electrolytes (e.g., Gatorade), remove protective clothing during breaks: check resting pulse and increase number of breaks if pulse does not return to normal during work break.

In cold ambient temperatures (<35°F.), follow hypothermia precautions. Work may only progress during daylight hours or under conditions of adequate lighting.

ELECTRICAL HAZARDS:

Will be located by U.S.A. before drilling.

Maintain at least 10 feet clearance from overhead power lines. If unavoidably close to overhead or buried power lines, turn power off and lockout circuit breaker. Avoid standing in water when operating electrical equipment.

CONFINED SPACES

Monitor organic vapors and oxygen before entering. If following value exceeded, do not enter:

Oxygen <20.0%

Total hydrocarbons > 5 ppm above background, if all air contaminants have not been identified.

Concentrations of specific air contaminants exceeding action levels in Section D, if all air contaminants have been identified.

If entering a confined space, monitor oxygen and organic vapors continuously.

Agencies contacted in underground utility search:

E. EMERGENCY INFORMATION

LOCAL TELEPHONE NUMBERS (provide area codes):

Ambulance	911
Hospital Emergency Room	(415) 540-1303 Alta Bates Hospital - 3001 Colby St. Berkeley, CA.
Poison Control Center	1-800-523-2222
Fire Department	911 or 644-6161
Airport	(415) 577-4000 Oakland International
Explosives Unit	911

SITE RESOURCES:

Water supply available on site:	Yes XX	No ____
Telephone available on site:	Yes XX	No ____
Bathrooms available on site:	Yes XX	No ____
Other resources available on site:	Yes____	No XX
If yes, identify:		

If you answered "no" to any of the above questions, identify the closest available facility, and provide directions.

EMERGENCY CONTACTS		PHONE NO.
1. Project Manager:	Pat Wright	(916) 782-2110
2. Health and Safety Officer:	Brian Garber	(916) 782-2110
3. Site Contact:	Neil Hamre	(415) 527-1161
4. Regulatory Contact:	Gilbert Wistar	(415) 271-4320

F. EMERGENCY ROUTES

(Give name address, telephone number, directions, distance and time estimate, and map.)

HOSPITAL: Alta Bates

From Eastshore highway, go left (east) on Gilman, take Gilman to San Pablo (8 blocks). Turn right on San Pablo (south), follow to Ashby. Turn left on Ashby (east) and follow to Colby St. Colby St. is between Telegraph Ave. and College Ave. Hospital is at 3001 Colby St. Distance is approximately 5.5 miles. Travel time is approximately 10 minutes.

OTHER

G. HAZARD EVALUATION

PARAMETER	TLV (ppm)	OT (ppm)	IDLH (ppm)	VOLA-TILITY	SKIN HAZARD	EXPLOSIVITY
Benzene	0.1	4	2,000	H	L	H
Ethylbenzene	100	NS	2,000	M	L	H
Toluene	100	2	2,000	M	L	H
Xylene	100	<1	10,000	H	M	H
Gasoline	300	NS	NS	H	L	H

KEY:

OT = Odor Threshold
TL = Threshold Limit Value (Worker - 8 Hours)
IDLH = Immediately Dangerous to Life and Health
NS - None Specified H - High M - Medium
NR - Not Reported L - Low U - Unknown

G. HAZARDOUS PROPERTY INFORMATION
Explanations and footnotes

Water solubility is expressed in different terms in different references. Many references use the term "insoluble" for materials that will not readily mix with water, such as gasoline. However, most of these materials are water soluble at the part per millon or part per billion level. Gasoline for example, is insoluble in the gross sense, and will be found as a discreet layer on top of the ground water. But certain gasoline constituents, such as benzene, toluene, and xylene will also be found in solution in the ground water at the part per millon or part per billion level.

A. Water solubility expressed as 0.2g means 0.2 grams per 100 grams water at 20°C.

B. Solubility of metals depends on the compound in which they are present.

C. Several chlorinated hydrocarbons exhibit no flash point in conventional sense, but will burn in presence of high energy ignition source or will form explosive mixtures at temperatures above 200°F.

D. Practically non-flammable under standard conditions.

E. Expressed as mm Hg under standard conditions

F. Explosive concentrations of airborne dust can occur in confined areas.

G. Values for Threshold Limit Value - Time Weighted Average (TLV-TWA) are OSHA Permissible Exposure Limits (PEL) except where noted in H. and I.

H. TLV - TWA adopted by the American Conference of Government Industrial Hygienists (ACGIH) which is lower than the OSHA PEL.

I. TLV - TWA recommended by the National Institute for Occupational Safety and Health (NIOSH). A TLV or PEL has not been adopted by the ACGIH or OSHA.

J. A. - Corrosive
B. - Flammable
C. - Toxic
D. - Volatile
E. - Reactive
F. - Radioactive
G. - Carcinogen
H. - Infectious
K. Dermal Toxicity data is summarized in the following three categories:

Skin penetration

A - negligible penetration (solid-polar)
B - slight penetration (solid-nonpolar)
C - moderate penetration(liquid-nonpolar)
D - high penetration (gas/liquid-nonpolar)

Systemic Potency

E - slight hazard - LD_{50} = 500-15,000 mg/kg
lethal dose for 70 kg man = 1 pint-1 quart
F - moderate hazard - LD_{50} = 50-500 mg/kg
lethal dose for 70 kg man = 1 ounce-1 pint
G - extreme hazard - LD_{50} = 10-50 mg/kg
lethal dose for 70 kg man = drops to 20 ml

Local Potency

H - slight - reddening of skin
I - moderate - irritation/inflammation of skin
J - extreme - tissue destruction/necrosis

1. Acute Exposure Symptoms

A - abdominal pain
B - central nervous system depression
C - comatose
D - convulsions
E - confusion
F - dizziness
G - diarrhea
H - drowsiness
I - eye irritation
J - fever
K - headache
L - nausea
M - respiratory system irritation
N - skin irritation
O - tremors
P - unconsciousness
Q - vomiting
R - weakness

G. HAZARDOUS PROPERTY INFORMATION - FUELS

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Diesel Fuel	insoluble	0.81-0.90	---	130	---	0.6-1.3 6.0-7.5		none established	NE	0.008 ppm	BCD	CI	BCEFHIKL MNP
Gasoline	insoluble	0.72-0.76	3-4	-45	variable	1.4% 7.6%		300 ppm	NE	< 1 ppm	BCDG	CI	BCEFHIKL MNP
Kerosene	insoluble	0.83-1.0	---	100-165	5	0.7% 5.0%		none established	NE	0.008 ppm	BCD	CI	BCEFHIKL MNP

G. HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Acrolein	22%	0.8410	1.9	-15	214 mm	2.8% 31.0%	46	0.1 ppm	5 ppm	0.1-16.6 (0.21-0.5)	BCED	BJ	ABDFGHIK LMNOPQR
Acrylonitrile	7.1%	0.8060	1.8	30	83 mm	3.0% 17.0%	82	2.0 ppm	4,000 ppm	19-100	BCEGD	DIG	FGIKLMNQ R
Benzene	820 ppm	0.8765	2.8	12	75 mm	0.339% 7.1%	3800	10.0 ppm	2,000 ppm	4.68	BCGD	CIG	BCDFHIKL MNOQR
Bromomethane	0.1 g	1.732	3.3	none	1.88 atm	13.5% 14.5%		5.0 ppm	2,000 ppm	no odor	CD		BCDEIJKL MNOQR
Bromodichloromethane	insoluble	1.980	--	none	n/a	non-flam.	916	none established	none specified		CGD		BIMN
Bromoform	0.01 g	2.887	--	none	5 mm	non-flam.	1147	0.5 ppm	n/a	530	CED		BCDKMN
Carbon Tetrachloride	0.08%	1.5967	5.3	none	91 mm	non-flam.	2800	5.0 ppm	300 ppm	21.4-200	CD	JGH	ABCFGHKN Q
Chlorobenzene	0.01 g	1.1058	3.9	84	8.8 mm	1.3% 9.6%	2910	75.0 ppm	2,400 ppm	0.21-60	BCD	CIF	BCFIKLMN OPQR
Chloroethane	0.6 g	0.8978	2.2	-58	1.36 atm	3.8% 15.4%		1000.0 ppm	20,000 ppm		BCD		BFHIKMNP
2-Chloroethylvinyl Ether	insoluble	1.0475	3.7	80	30 mm	--	250	none established	none specified		BCD		HIM
Chloroform	0.8 g	1.4832	4.12	none	160 mm	non-flam.	800	10.0 ppm	1,000 ppm	50-307 fatigue (>4096)	CD		BCEGIKLM N
Chloromethane	0.74%	0.9159	1.8	32	50 atm	7.6% 19.0%		50.0 ppm	10,000 ppm	10-100 no odor (500-1000)	BCD	DHF	ABCDEFGI JKLOQR
Dibromochloromethane	insoluble	2.451	--	--	--	--	848	none	none		BCD		BFHIMNPQ

established specified

G. HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS (CONTINUED)

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
1,1-Dichloroethane (DCA)	0.1 g	1.1757	8.4	22	182 mm	6.0% 16.0%	725	100.0 ppm	4,000 ppm	5 ppm	BCD		ABHIMNO
1,2-Dichloroethane	0.8%	1.2554	3.4	55	87 mm	6.2% 16.0%	670	10.0 ppm[H]	1,000 ppm	6 ppm	BCDG		BCFGLMNQ
1,1-Dichloroethylene (DCE)	2250 mg/l @ 77°F	--	3.4	3	591 mm	7.3% 16.0%	200	5.0 ppm[H]	none specified		BCD		BIMN
Trans-1,2-Dichloroethylene	slightly soluble	1.2565	--	36	400 mm	9.7% 12.8%		none established	none specified	.0043 mg/l	BCD		ABFILOQ
1,2 Dichloropropane	0.26%	1.1583	3.9	60	40 mm	3.4% 14.5%	1900	75.0 ppm	2,000 ppm	50	BCD		ABGHIKMN Q
Cis-1,3-Dichloropropane	insoluble	1.2	3.8	83	28 mm	5.0% 14.5%	250	1.0 ppm[H]	none specified		BCD		ABGHIKLM NP
Trans-1,3-Dichloropropane	insoluble	1.2	3.8	83	28 mm	5.0% 14.5%		1.0 ppm[H]	none specified		BCD		ABGHIKLM NP
Ethylbenzene	0.015 g	0.867	3.7	59	7.1 mm	1.0% 6.7%	3500	100.0 ppm	2,000 ppm	0.25-200 (200)	BCD	CIF	ABFHIKLM NPQR
Methylene Chloride	slightly soluble	1.335	2.9	none	350 mm	12.0%[C] unavailable	167	100.0 ppm[H]	5,000 ppm	25-320 (5000)	CED	CIF	BCIKLMNP R
1,1,2,2-Tetrachloroethane	0.19%	1.5953	5.8	none	5 mm	non-flam.		1.0 ppm[H]	150 ppm	3-5	CD		ABCFHIKL MNOQ
Tetrachloroethylene	0.15 g/ml	1.6227	5.8	none	15.8 mm	non-flam.	8850	50.0 ppm[H]	500 ppm	4.68-50 (160-690)	CD		ACFHIKLM NP
1,1,1-Trichloroethane (TCA)	0.07 g	1.3390	4.6	none	100 mm	8.0%[C] 10.5%	10300	350.0 ppm	1,000 ppm	20-400 (500-1000)	BCED		ABEFHIKL NOP
1,1,2-Trichloroethane	0.45	1.4397	4.6	none	19 mm	6.0%[C] 15.5%	1140	10.0 ppm	500 ppm	0	C		BEFGHIKL MNOPQ

G. HAZARDOUS PROPERTY INFORMATION - VOLATILE ORGANIC PRIORITY POLLUTANTS (CONTINUED)

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Trichloroethylene (TCE)	0.1%	1.4642	4.5	90	58 mm	12.5% 90.0%	4920	50.0 ppm[H]	1,000 ppm	21.4-400	BC		BFKLNOPQ
Trichlorofluoromethane	0.11 g	1.494	--	none	0.91 atm	non-flam.		1000.0 ppm	10,000 ppm	135-209	CD		BFHKLQ
Toluene	0.05 g	0.866	3.2	40	22 mm	1.3% 7.1%	5000	100.0 ppm	2,000 ppm	0.17-40 fatigue (300-400)	BC	BHE	BEFHIKLM NOPQ
Vinyl Chloride	negligible	0.9100	2.24	-108	3.31 atm	3.6% 33.0%	500	1.0 ppm	none specified	260	BCEG	DJG	ABFHIKLN R

G. HAZARDOUS PROPERTY INFORMATION - HEAVY METALS

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Arsenic	B	5.727	n/a	none	n/a	F		10.0 ug/m^3	none specified		CEG	CJG	ACDGJLMO QR
Beryllium	B	1.85	n/a	none	n/a	F		2.0 ug/m^3	none specified		C		IJMNR
Cadmium	B	8.642	n/a	none	n/a	F	225	0.5 mg/m^3	40/mg^3		C		ABGIKLMN QR
Chromium	B	7.20	n/a	none	n/a	F F		0.5 mg/m^3[H]	500/mg^3				FMNQ
Copper	B	8.92	n/a	none	n/a	F		0.1 mg/m^3	none specified		C		FGIJLMOQ R
Lead	B	11.3437	n/a	none	n/a	F		50.0 ug/m^3	none specified		C		ACDFGOQR
Mercury	B	13.5939	7.0	none	0.0012 mm	F		50.0 ug/m^3[H]	28 mg/m^3		C		AGLMNQ
Nickel	B	8.9	n/a	none	n/a	F		1.0 mg/m^3	none specified		C		DGJLMNQ
Silver	B	10.5	n/a	none	n/a	F		0.01 mg/m^3	none specified		C		IN
Thallium	B	11.85	n/a	none	n/a	F		0.1 mg/m^3	20 mg/m^3		C	BG	ADGLNOQ
Zinc	B	7.14	n/a	none	n/a	F		none established	none specified		C		DF

G. HAZARDOUS PROPERTY INFORMATION - MISCELLANEOUS

Material	Water[A] Solubility	Specific Gravity	Vapor Density	Flash Point °F	Vapor[E] Pressure	LEL UEL	LD_{50} mg/kg	TLV-TWA[G]	IDLH Level	Odor Threshold or Warning Concentration	Hazard[J] Property	Dermal[K] Toxicity	Accute[L] Exposure Symptoms
Acetone	soluble	0.8	2.0	-4	400 mm	2.5% 12.8%	9750	750 ppm	10,000 ppm	100	BCD	DI	N
Asbestos	insoluble	2.5	n/a	none	n/a	non-flam.		0.2-2 fibers/cc	none specified		CG		MN
Chromic Acid	soluble	1.67-2.82	n/a	none	n/a	non-flam.		none established	none specified		ACEG		GIN
Cyanides	58-72%		n/a	none	n/a	non-flam.		5 mg/m^3	50 mg/m^3		CE		FKLNPQ
PCB (Generic)	slightly soluble	--	n/a	none	n/a	non-flam.		1.0 ug/m^3[31]	none specified		CG		CHLPQ
Phenol	8.4%	1.0576	3.2	175	0.36 mm	1.8% 8.6%	414	5 ppm	100 ppm	0.047-5 (48)	C		ABCDGIKM NOQ
Xylene	0.00003%	0.8642	3.7	84	9.0 mm	1.1% 7.0%	5000	100 ppm	10,000 ppm	0.5-200 (200)	BCD		ABFHIKLM NPQ